

STATEMENT PRESENTED

BY

CHAIRMAN SHIRLEY ANN JACKSON

UNITED STATES NUCLEAR REGULATORY COMMISSION

TO THE

SUBCOMMITTEE ON ENERGY AND POWER

COMMITTEE ON COMMERCE

UNITED STATES HOUSE OF REPRESENTATIVES

CONCERNING

HIGH-LEVEL WASTE LEGISLATION

SUBMITTED: APRIL 29, 1997

Mr. Chairman, members of the Subcommittee, the U.S. Nuclear Regulatory Commission (NRC) is pleased to accept your invitation to provide testimony addressing the progress of the Department of Energy's (DOE) program to characterize the Yucca Mountain Site as a potential geologic repository for high-level nuclear waste, and to highlight for you the Commission's pre-licensing activities. I also welcome the opportunity to discuss our views on H.R. 1270, the "Nuclear Waste Policy Act of 1997," pending before this Committee.

I will begin with a presentation of the Commission's views on the proposed legislation before this Committee. In general, the Commission agrees with the fundamental approach taken in H.R. 1270, although some aspects are of concern to us.

We believe that H.R. 1270 contains the fundamental elements of an integrated high-level nuclear waste management system needed for the protection of public health and safety, and the environment. These elements include interim on-site storage, centralized interim off-site storage, and deep geologic disposal, together with a transportation mechanism to tie the elements together. In our view, H.R. 1270 recognizes that the overall, long-term success of this nation's program to manage spent fuel and other high-level radioactive waste is dependent on finding a permanent solution to the safe disposition of this material.

With respect to interim on-site storage of spent fuel at reactor sites, the NRC considers both wet and dry storage to be safe technologies, but we view dry storage as the preferred method for supplementary storage of spent fuel at operating plants.

We believe the provision in H.R. 1270 for centralized interim storage of spent fuel has several positive features. Continued at-reactor storage, for an interim period, would protect public health and safety. However, a centralized interim storage facility, when compared to dispersed storage at more than 75 sites throughout the country, would allow for a more focused inspection and surveillance program by both the Department of Energy and the NRC. In addition, such a facility would save valuable inspection resources for permanently shut-down facilities, and would offer operational and programmatic benefits in the Department of Energy's program for accepting waste from utilities. Therefore, because there are advantages to centralized interim off-site storage, we believe that establishment of such a facility under H.R. 1270 could partially resolve one of the most vexing issues facing this nation. However, the NRC takes no position as to where a centralized facility should be located. We must make the appropriate safety and regulatory judgements no matter where such a facility might be located.

Should the Congress enact a high-level nuclear waste bill along the lines of either H. R. 1270 or S. 104, it is very important to the Commission's high-level nuclear waste program that adequate resources are received from the Congress to meet our statutory responsibilities.

Below I shall address three principal aspects of H.R. 1270, and the recently passed Senate bill S. 104. These aspects are the NRC's waste confidence decision, schedules specified in the respective bills, and the proposed performance standard.

WASTE CONFIDENCE

Indefinite storage in an above-ground facility is inconsistent with the Commission's Waste Confidence decision which is predicated ultimately on the existence of a mined geologic repository for high-level nuclear waste. The Commission, therefore, strongly supports including in H.R. 1270 deep geologic disposal as an essential element of an integrated system. The Commission continues to believe that deep geologic disposal is a sound and technically feasible solution to the problem of final disposition of spent nuclear fuel and other high-level radioactive wastes. Further, we are confident that the

Commission will be able to determine, with reasonable assurance, that spent fuel and other high-level wastes can be disposed of safely in a geologic repository, assuming that we receive from the Department of Energy a high quality license application, and that the NRC can maintain its technical capabilities for licensing deep geologic disposal contingent on adequate funding for the NRC high-level waste program. Thus, we support and recommend that the Congress include the provision in H.R. 1270 on Waste Confidence which would base that confidence, not only on the Department of Energy's obligation to construct and operate an interim storage facility, but also on its obligation to develop the complete integrated spent fuel management system. The Commission believes H.R. 1270 is preferable, in this regard, to S. 104, which contains no comparable Waste Confidence provision.

SCHEDULES

The NRC is concerned that the overall schedule which provides for the Department of Energy's acceptance of high-level nuclear waste for interim storage no later than January 31, 2000, and its submission of the license application for the permanent repository no later than December 31, 2002, sets these programs on a collision course with respect to a need for resources, if

adequate funding is not provided for both of these fundamental elements of the integrated high-level nuclear waste management system.

We would like to comment on one aspect of H.R. 1270 related to centralized interim storage that would impact our normal regulatory process. Our concern relates to the proposed timeline in H.R. 1270 for licensing a centralized interim storage facility. H.R. 1270 would require the Commission to license the Phase One facility within 16 months of receipt of an application. Our past experience in licensing dry storage facilities leads us to believe that 2-3 years may be necessary. A fundamental requisite is that the NRC receive an initial license application from the Department of Energy of sufficiently high quality that the NRC can complete its safety review in a timely manner. If the application for Phase One requests approval for non-commercial as well as commercial spent fuel, the review period may need to be extended. This schedule impact could be avoided if approval for non-commercial fuel storage is delayed until Phase Two. In addition, there must be the opportunity for a public hearing, because public participation is a fundamental part of NRC licensing actions, and is a key element in retaining public confidence in our licensing process. S. 104 provides a timeline for licensing a central interim storage facility which

is more comparable to the process we believe would be necessary to accomplish the task, and we respectfully request that you consider the S. 104 approach.

PERFORMANCE STANDARD

With respect to the proposed performance standard for the repository in H.R. 1270, the Commission does not object to a single, overall performance standard for a 10,000-year period following commencement of repository operations. The Commission considers that 10,000 years is a sufficient length of time to demonstrate the isolation capability of the system, including contributions from both engineered and natural barriers. The Commission notes the standard in H.R. 1270 of an annual effective dose of 100 mrem (1 mSv) to the average member of the general population in the vicinity of Yucca Mountain, and views that standard as consistent with the protection of the public health and safety. The NRC believes that within the context of implementing the 100 mrem annual dose limit specified in H.R. 1270, it has the flexibility to implement the internationally accepted "average member of the critical group" approach using a reference biosphere, as recommended by the National Academy of Sciences, for application to the Yucca Mountain repository. To provide reasonable assurance that the 100 mrem limit will be met, the Commission anticipates that the expected value for the average member of the critical group would be constrained below 100 mrem to on the order of 30 mrem a year. (This is consistent with the use of the critical group concept in S.104.)

Furthermore, within this limit, to enhance confidence that the standard will be met, the Commission would expect the Department of Energy to evaluate alternatives among the major repository design features. In order to facilitate implementation of the standard specified in H.R. 1270, the Commission would expect to use performance measures to evaluate major repository system features from the standpoint of whether they contribute to, or detract from, overall system performance.

The Commission notes that the overall performance standard in H.R. 1270 differs from the standard in S. 104, the Senate-passed bill, which sets a risk standard for protection of the public by limiting the lifetime risk to the average member of the critical group to approximately, but not greater than, 1 in 1,000 for the risk of premature death from cancer due to repository releases. The Commission believes that either standard can be implemented without significant regulatory problems, and that both standards are adequately protective of public health and safety. However, the standard in S. 104 may provide clearer direction for implementation. For example, S. 104 provides a definition of the term "critical group" and identifies factors that need not be considered in implementing the standard.

OTHER CONSIDERATIONS

As to section 205 (b) of H.R. 1270, which directs the Commission to amend its regulations on high-level nuclear waste disposal "within one year of the date of enactment," we note that it could be difficult to accomplish these activities in the time allowed because there are significant technical activities which must be completed to provide the basis for the development of a regulatory framework. Examples of these activities include defining the critical group, and defining the reference biosphere for the Yucca Mountain site.

We agree with provisions in H.R. 1270 which revoke the Department of Energy's repository siting guidelines. We believe this will allow the Department of Energy to focus its repository efforts on developing the high-quality license application that we will need.

We support provisions in H.R. 1270 on the scope of the NRC's National Environmental Policy Act (NEPA) responsibilities for high-level waste disposal that, consistent with existing law, direct the NRC to adopt the Department of Energy's Environmental Impact Statement, to the extent practicable, in the repository licensing proceeding.

With respect to the NRC's Environmental Impact Statement for a centralized interim storage facility, the Commission supports H.R. 1270 in requiring the generic consideration of transportation impacts, and in identifying the issues that should not be considered by the Commission under NEPA for interim storage.

Further, the bill should make clear that amendments to the Commission's regulations to implement the Act shall not require the preparation of an environmental impact statement or an environmental review under NEPA.

The Commission does not object to the H.R. 1270 provision for issuance of a license for centralized storage in phases, to accommodate expansion of storage capacity. However, it should be recognized that some generic licensing considerations and siting factors are essentially independent of storage capacity and will need to be met by the Department of Energy for all licensing phases.

FUNDING IMPROVEMENTS

In addition to these issues I would note that we support a mechanism which would use the revenues from charges levied for the integrated waste management system exclusively for these activities. This change will help encourage funding stability at a level necessary to sustain the high-level waste program of the NRC, as well as that of the Department of Energy.

NRC OBSERVATIONS ON THE REPOSITORY PROGRAM

The Committee also requested that the NRC address the Department of Energy's progress in characterizing the Yucca Mountain site for its suitability as a permanent repository. In the last few years, the Department of Energy has revised its Program Approach to address critical unanswered technical questions in order to support a 1998 assessment of the viability of a proposed geologic high-level nuclear waste repository at Yucca Mountain. Likewise, as I will discuss in a moment, the NRC has refocused its prelicensing program on key technical issues which are of greatest importance for licensing. The NRC has been encouraged by the Department of Energy's use of Total System Performance Assessment, and its development of a Waste Containment and Isolation Strategy to bring greater attention to issues important to licensing. The Commission believes that it has witnessed a

clear improvement in the Department of Energy's overall program, including planning, focus on a "safety case" for licensing, specific accomplishments, and in its communications with the NRC. This is particularly notable, given the long time scales of interest, and the unique issues posed by the repository program.

The working relationship between the NRC staff and that of the Department of Energy's program also has improved over the years. However, it is important to keep in mind the differing perspectives that reflect the fundamentally different roles of our two agencies. The Commission underscores the fact that the ultimate responsibility--for demonstrating that licensing requirements are met and, are appropriately implemented to protect public health and safety--rests with the Department of Energy. However, in order to license a repository at Yucca Mountain (or any site), the Commission must independently assess, and find "with reasonable assurance" that such demonstration has been made, recognizing that uncertainty must be acceptably addressed in this assessment.

Timely NRC review of a potential repository license application will depend on, among other things, receipt of a high-quality license application from the Department of Energy, as well as on sufficient NRC resources to maintain its independent technical

review capability. Critical to this capability is the continued viability of the NRC's contractor, the Center for Nuclear Waste Regulatory Analyses ("Center") in San Antonio. The Center provides the NRC with an independent source of technical expertise which enhances the credibility of NRC's review process. This expertise also is critical to the evidentiary aspects of any adjudicatory proceedings which would be a necessary part of the licensing process for a geologic repository for spent nuclear fuel and other high-level waste. Without ready access to such expertise, it may be difficult to identify the novel licensing issues early in the process that are almost certain to arise in connection with this "first-of-a-kind" facility.

A key element of the refocussed strategy of the NRC is to identify potential vulnerabilities for licensing early in the process, and to resolve with the Department of Energy, at the staff level, key technical issues that are most important to repository performance. NRC staff have made notable progress in addressing a number of key technical issues.

I would like to point out, by way of a few examples, the positive impact that cooperation between NRC, the Department of Energy, and the Center is having on progress within the overall program. The ability for waste packages to contain radioactive materials

for very long periods of time is essential. Earlier this year, the Center's staff confirmed that the kinds of metals used in the Department of Energy container designs could, under certain conditions, interact with each other in a way that could greatly limit the rate of corrosion. This process, called "galvanic protection," will be examined in the laboratory to confirm its positive effects. In a second area, the Department of Energy and the NRC are nearing resolution, at the staff level, on the probability of volcanism in the vicinity of Yucca Mountain. This work addresses a long-standing concern regarding a potentially disruptive process that could occur at the site. The final area I would note influences all aspects of the high-level waste program. We are placing greater emphasis on performance assessment to evaluate the engineered components of the proposed repository, and the characteristics of the geologic setting within which it is located. This approach is having major positive impacts in: (1) determining the relative importance of the various technical issues; (2) providing a basis for development of risk-informed, performance-based regulations; and (3) preparing methods for conducting a focused review of the DOE's Viability Assessment and Site Suitability Report.

Based on progress to date and assuming receipt of our requested level of funding in coming fiscal years, we anticipate having

resolved, at the staff level, key technical issues sufficient to address the Viability Assessment of the Department of Energy in FY 1998-1999. The remaining technical analyses and the review plan will be completed in the period before the Department of Energy submits its license application by December 31, 2002, as provided in H.R. 1270.

The Commission believes that progress on the repository program is very important to the overall success of the nation's high-level radioactive waste program which depends on finding a permanent solution to the safe disposal of spent fuel and other high-level wastes. In this regard, the Commission supports provisions in H.R. 1270 that give budget priority to an operating repository, thus recognizing that the Department of Energy must control interim storage costs in a cost-efficient manner in order to assure adequate funding for repository development.

CONCLUSION

In summary, the Commission agrees that H.R. 1270 constitutes an appropriate program for the permanent disposition of high-level radioactive waste, by providing an integrated spent fuel management system that contains the necessary fundamental elements -- on-site interim storage, centralized off-site

storage, and deep geologic disposal, with a transportation system to link them. There is a need for both statutory and institutional stability for our nation's high-level waste program so that the program can proceed in an orderly and business-like fashion. The Commission believes that, when coupled with funding sufficient to maintain progress in all phases, H.R. 1270 can and will provide the necessary stability for the nation's high-level radioactive waste program. We appreciate the opportunity to provide our views.

U. S. NUCLEAR REGULATORY COMMISSION'S SUMMARY
APRIL 29, 1997 HEARING CONCERNING HIGH LEVEL RADIOACTIVE WASTE

The Commission believes that H.R. 1270 contains the fundamental elements of an integrated high-level nuclear waste management system needed for the protection of public health and safety, and the environment. These elements include interim on-site storage, centralized interim off-site storage, and deep geologic disposal, together with a transportation mechanism to tie the elements together. However, the NRC is concerned that the overall schedule, which provides for the Department of Energy's (DOE) acceptance of waste for interim storage no later than January 31, 2000, and submission of the license application for the permanent repository no later than December 31, 2002, sets these programs on a collision course with respect to a need for resources if adequate funding is not provided for both of these fundamental elements of the integrated high-level waste management system.

Because there are advantages to centralized interim off-site storage, we believe that establishment of such a facility under H.R. 1270 could partially resolve one of the most vexing issues facing this nation. However, the NRC takes no position as to where such a facility should be located. We must make the appropriate safety and regulatory judgments no matter where it is located.

We are concerned about one aspect of H.R. 1270 related to centralized interim storage that would impact our normal regulatory process. Our concern relates to the proposed time line for licensing a centralized interim storage facility. H.R. 1270 would require the Commission to license the Phase One facility within 16 months of receipt of an application. Our past experience in licensing dry cask storage facilities leads us to believe that 2-3 years may be necessary.

We support and recommend the provision in H.R. 1270 on Waste Confidence, which would base that confidence not only on the Department of Energy's obligation to construct and operate an interim storage facility, but also on its obligation to develop the complete integrated spent fuel management system. The Commission believes H.R. 1270 is preferable, in this regard, to S. 104, which contains no comparable Waste Confidence provision.

With respect to the proposed performance standard in H.R. 1270, the Commission does not object to a single, overall performance standard for the repository for a 10,000-year period following commencement of repository operations. We also note the standard in H.R. 1270 is an annual effective dose of 100 mrem, or 1 mSv, to the average member of the general population in the vicinity of Yucca Mt., and view that standard as consistent with the protection of public health and safety. While the overall performance standard in H.R. 1270 is somewhat different from the standard in S. 104, the Commission believes that either standard can be implemented without significant regulatory problems, and that both standards are adequately protective of public health and safety. However, the standard in S. 104 may provide clearer direction for implementation.

In addition, we agree with provisions in H.R. 1270 which revoke the Department of Energy's siting guidelines. We do not object to the H.R. 1270 provision for issuance of a license for centralized storage in phases, to accommodate expansion of storage capacity. We support provisions in H.R. 1270 on the scope of the NRC's NEPA responsibilities for disposal that,

consistent with existing law, direct the NRC to adopt the Department of Energy's Environmental Impact Statement, to the extent practicable, in the repository licensing proceeding.

Regarding the Department of Energy's progress in characterizing the Yucca Mt., the NRC believes it has witnessed a clear improvement in the Department of Energy's overall program, including planning, focus on a "safety case" for licensing, specific accomplishments, and improved communications with NRC. A key element of the refocussed strategy of the NRC is to identify potential vulnerabilities for licensing, early in the process, and to resolve with the Department of Energy, at the staff level, key technical issues that are most important to repository performance. The NRC staff have made notable progress in addressing a number of the key technical issues.